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PCB Remains Active Despite Drop in Use

PCBs — Polychlorinated Biphenyls — are truly a global pollutant.

The man-made chemical had increasingly widespread use in industry from 1930 to 1971. Electrical capacitators, insulating fluids (like the oil cooling electric transformers), carbonless copypaper, plasticisers and a multitude of other products once included PCB.

IT WAS ESTIMATED one billion pounds of PCBs were produced in the 40 years prior to 1971 and that almost three-fourths of that amount entered the environment.

In 1966, Swedish chemist Soren Jensen found relatively high concentrations in fish from 300 different sites in Sweden. Since that time, scientists have found PCBs almost everywhere they have looked.

A major reason for the wide dispersal is that PCBs can be converted from DDT (now banned) by the action of sunlight.

PCBs have a low toxicity for man, but scientists have not determined long-range effects. The chemical is lethally toxic to fish and aquatic invertebrates at environmental concentrations of several parts per billion.

STEPHEN B. MORTON, head of the Environmental Quality Department for the Institute-Wisconsin Alumni Research Foundation, claims PCB concentrations in U.S. waters are "usually in the range of .0001 to .004 parts per million."

The Texas Department of Water Resources measured Lake Brazos' PCB content in 1977 at .02 parts per million above the M. Lipsitz Co.'s work site and .04 parts per million downstream — 10 times what Morton cited as the upper level of the norm.

Scientists are concerned about PCB contamination because the chemical is practically nondegradable and will remain in the environment for generations, accumulating in the food chain.

An explanation in *Chemistry: Principles and Applications* by G. Tyler Miller Jr. notes, "If each phytoplankton concentrates 1 unit of DDT from water, then small fish eating thousands of phytoplankton will get thousands of units of DDT.

"A LARGE FISH that eats ten of these smaller fish will receive tens of thousands of units of DDT. A bird or human that feeds on several large fish can get hundreds of thousands of units of DDT," Miller wrote.

Dr. David Pennington, associate professor of chemistry at Baylor, said the same principle applies to PCB.

In 1970, Monsanto, the only U.S. maker of PCB, voluntarily stopped "open use" purposes of PCB and restricted their production to "closed uses" like PCB-oils for transformers.

Bob French of Texas Power & Light Co. explained PCB's fire-retardant qualities were the key to their usage in transformers. The oil cools the transformer and "cuts down on the flame from an arc over," he said.

French estimated 10 percent or fewer of TP&L's transformers currently contain PCB-oil because it has been phased out since 1977.

THE ELECTRIC capacitators, installed on power lines to regulate the voltage, mainly contained PCB "up to five years ago" but PCB-capacitators now only make up 10 to 15 percent of TP&L's inventory, French said.

TP&L sold their "junk" transformers after workers drained the oil, but French said, "You can't get all the oil out — there is always some left in the bottom."

French said a few months ago he received word not to sell any more transformers. An average-sized transformer brought about $7.50. They are currently being stored until "they can be destroyed in a proper manner."

Toxic Materials News 9/12/79

TOXIC PCB BY-PRODUCTS FOUND IN FISH

Using some of the highly sophisticated equipment alluded to by Rep. James Martin at the ACS meeting, scientists for the U.S. Fish and Wildlife Service have discovered a little-known contaminant called polychlorinated dibenzofurans (PCDFs) in fish in U.S. waters. PCDFs are toxic by-products of the more famous contaminant PCB.

Dr. David Stalling and a research team told the convention Sept. 11 that some PCDFs are considered up to 500 times more deadly than their parent compound. However, Stalling pointed out that there are several forms of PCDFs and that the researchers were not yet certain which form of contaminants were discovered or how hazardous they may be to fish or other aquatic organisms. There are 135 possible PCDF compounds Stallings said. He also noted that a 1968 Japanese food poisoning incident, which killed several people and left 100 others suffering from chronic headaches, fatigue, weight loss and numbness, was due to rice oil that was contaminated with PCDFs.